

## Controlant Transceivers User's Guide

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Type	Description
CO 01.01	Wireless transceiver with GPRS

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## General Information

### About this guide

This guide describes the features and functions of a Controlant wireless transceiver product, CO 01.01, with GPRS connectivity. The guide includes connection and setup information, configuration, data retrieval, LEDs and buttons.

### Scope

This guide covers Controlant wireless transceiver CO 01.01. Please contact Controlant at [support@controlant.com](mailto:support@controlant.com) for questions regarding compatibility between hardware and software versions.

### Warranty exception

Opening the enclosure of the CO 01.01, unless supervised or carried out by service personnel approved by Controlant, voids all warranty against equipment malfunction.

Controlant's CO 01.01 wireless transceiver products ships with batteries included. Lithium batteries must be replaced by Controlant or service personnel approved by Controlant. No warranty is on the behavior of Controlant's equipment in case of wrong battery installation by non-qualified personnel or in case of usage of batteries which Controlant does not approve of.

### Additional reference material

Additional information about features and functions of Controlant transceiver products can be found at [www.controlant.com](http://www.controlant.com)

### Questions and technical support

For technical assistance with your product, contact Controlant Technical Support at +354-517-0630 or [support@controlant.com](mailto:support@controlant.com)

## Controlant Wireless GPRS Transceiver - CO 01.01

### Overview



Figure 1: Illustration of the CO 01.01 wireless GPRS transceiver

The Controlant wireless GPRS transceiver, CO 01.01, provides on-line connectivity to multiple Controlant wireless sensors. The purpose of the transceiver is to gather measurements from multiple sensors in its vicinity and transfer the data to a centralized on-line database.

The Controlant wireless GPRS transceiver is able to generate and broadcast warnings via e-mail or in a text message (SMS) if measured values are outside of a user defined range. The transceiver has a built-in lithium Ion battery which is used as a backup power source.

### Enclosure

The CO 01.01 transceiver is offered in a standard aluminum enclosure.

### Power options

#### Power supply

The Controlant wireless GPRS transceiver should be DC powered using an external power source. The operating range of the device is 7-13V DC and the external power supply should be limited to maximum DC output current above 1A and below 2A. Detailed information about the DC power connector plug is provided below.

#### Battery pack

Each CO 01.01 transceiver has a built in lithium Ion battery which will keep the system running in case of external power failure. The battery should only be replaced by Controlant employees or trained personnel approved by Controlant. In case of replacement, only batteries approved by Controlant should be used.

#### CAUTION!

**RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.**

## LEDs, Buttons and Connectors

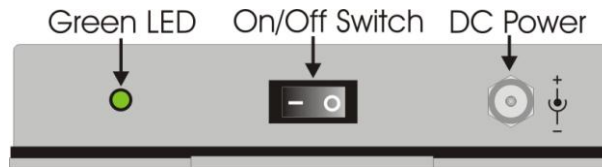


Figure 2: LED, On/Off switch and DC power connector for the CO 01.01 transceiver.

### Connection and power-on

1. Connect the DC plug of the external power supply to the DC power inlet.
2. Turn on the power switch.
3. Wait for the LED indicator light to indicate full operation.

### LED indicator light

A green LED indicates the status of the transceiver.

Indications:

- On/Off
- Status of external power
- On-line connection status

LED status	Status
Off	The transceiver is turned off, or is not operating. (Note that if the internal battery is empty the transceiver may take up to 20 minutes to reach the charge necessary to operate the system)
Off, blinking every 0.5 seconds	Operating on battery. The local network is up and running. No connection to central database.
Off, blinking every 2 seconds	Operating on battery. The local network is up and running. Initializing connection to central database.(Note that more than 4 minutes in this mode might indicate a failure in GPRS connection)
Off, blinking every 4 seconds	Operating on battery. The local network is up and running. Data is being transferred to the central database.
On, blinking every 0.5 seconds	Charging mode. The transceiver is connected to a power source and is being charged. The local network is up and running. No connection to central database.
On, blinking every 2 seconds	Charging mode. The transceiver is connected to a power source and is being charged. The local network is up and running. Initializing connection to central database.(Note that more than 4 minutes in this mode might indicate a failure in GPRS connection)
On, blinking every 5 seconds	Charging mode. The transceiver is connected to a power source and is being charged. The local network is up and running. Data is being transferred to the central database.

### On/Off Switch

The power switch has two purposes, to set the transceiver into hibernation mode and to do a full reset. The power switch does not physically disconnect the device from the power source.

The transceiver is therefore able to send an indication of the current power state before going into hibernation, making operators able to identify whether or not the device has been turned off or if there has been a failure in the system.

On/Off Switch	Behavior
On	Full function of the transceiver.
Off	Hibernation mode. All modules go to hibernation mode and wait until the switch is turned on again.
Toggled Off for less than 2 seconds	Has no effect on the transceiver.
Toggled Off for more than 2 seconds and less than 10 seconds	Resets all sub-systems within the transceiver. Powers up from reset normally.
Toggled Off for more than 10 seconds	If toggled Off for more than 10 seconds the transceiver goes into hibernation mode. The transceiver remains in that state until the On/Off switch is set to On again. After that the transceiver powers on normally.

## Power connector

The power connector dimensions are 2.5 x 5.5 x 14 mm as shown in Figure 3 and the polarity is shown in Figure 4

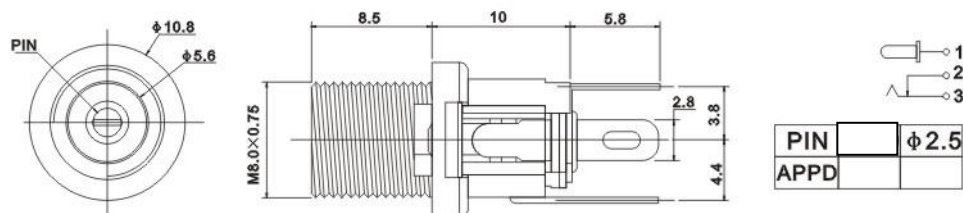


Figure 3: Mechanical drawings of the DC power plug on the CO 01.01



Figure 4: Polarity of the DC power connector on the CO 01.01 wireless transceiver.

## Specifications and ratings

### Environmental range

The wireless transceiver's working range is the following

1. Humidity
  - a. 0-99% humidity for normal operation.
  - b. Long term exposure to high levels of humidity may cause unexpected behavior in device.
2. Temperature
  - a. Recommended operating range is 0-40°C
  - b. Absolute minimum and maximum temperatures are -20°C and 60°C. Functionality may be lost at extreme temperatures

### Handling and installation

The transceivers rugged enclosure ensures a good protection against damage. The enclosure does not protect external components such as antennas, wiring and cables, on/off switch and LED.

The enclosure is designed to withstand spraying water from vertical downward direction (up to 60° from vertical alignment). Orientation of the transceiver should therefore be vertical for maximum protection as demonstrated in the image to the right.

Cleaning of transceivers should be done with neutral soap to prevent rubber sealing, buttons and LEDs from failing. In case of a need to sanitize or sterilize, use alcohol based compounds and wipe with cloth.

### Mounting orientation

The wireless transceiver can be mounted to a surface by using screws or bolts as shown in Figure 5. Screws and bolts must be chosen according to the mounting surface. The transceiver weighs 370 g. Care must be taken that screws and bolts can handle the weight for the given surface type. Improper mounting and installation can cause the transceiver to fall from its intended position and cause harm to nearby people. To lower risk of harm due to improper installation, installation should be carried out by a qualified person.



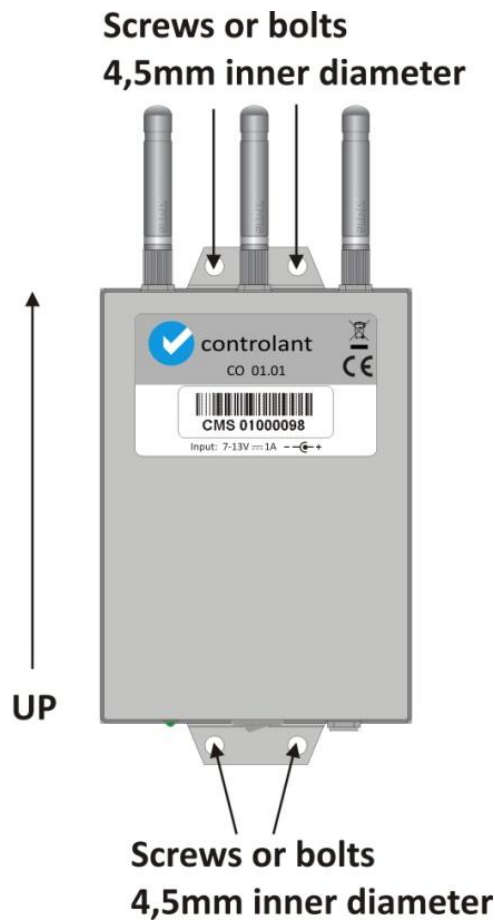


Figure 5: Mounting orientation of Controlant wireless transceivers

## Antennas

The CO 01.01 GPRS transceiver has 3 antenna connectors. Two are intended for local wireless communication purposes, and one for GPRS connectivity. Location of each connector is shown in Figure 6. Antenna connectors are RP-SMA and the GPRS antenna connector is SMA.

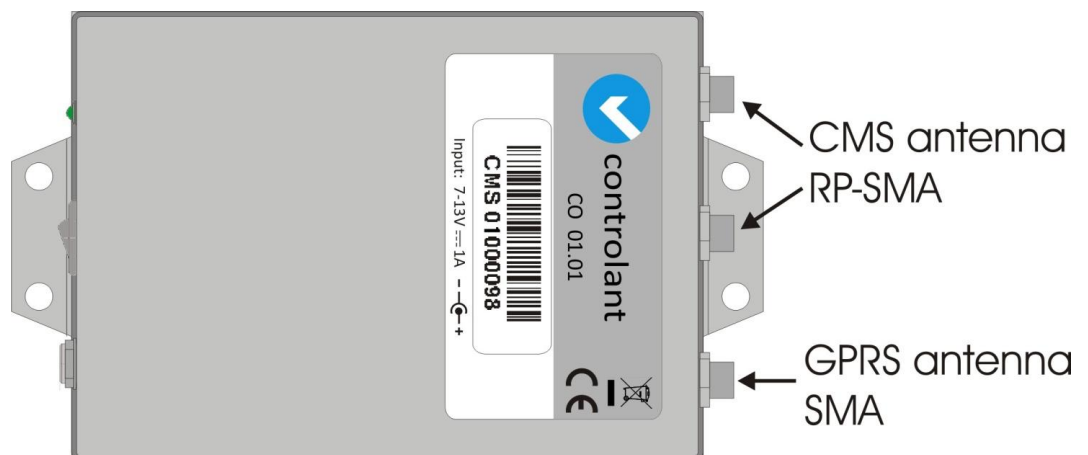


Figure 6: Antenna connectors on the CO 01.01

## Fuse replacement

CO 01.01 wireless transceivers come with an internal fuse. The fuse should only be replaced by Controlant or service personnel approved by Controlant.

## Wireless Connectivity

Controlant wireless devices have up to 400m range in open air. The communication frequency channels are around 868MHz.

The range in open air depends on various factors, including:

1. Mounting and antenna orientation.
2. Proper assembly and selection of antennas.
3. Disturbance on communication frequencies caused by electronic devices, both low and high current.
4. Disturbance on communication frequencies caused by other wireless devices.

Wireless range is significantly affected by occlusion by objects. The indoor range of Controlant devices depends on various factors, including:

1. Building materials in walls and ceilings.
2. Metal objects occluding the path of the signal.
3. Proper assembly and selection of antennas.
4. Disturbance on communication frequencies caused by electronic devices, both low and high current.
5. Disturbance on communication frequencies caused by other wireless devices.

## GPRS connectivity

The GPRS connectivity depends on the network coverage of the network service provider in that area. If the LED on the transceiver indicates that no signal can be found – try to move the transceiver to an open location (window, open air etc.) or contact the network service provider for information about network coverage in your area.